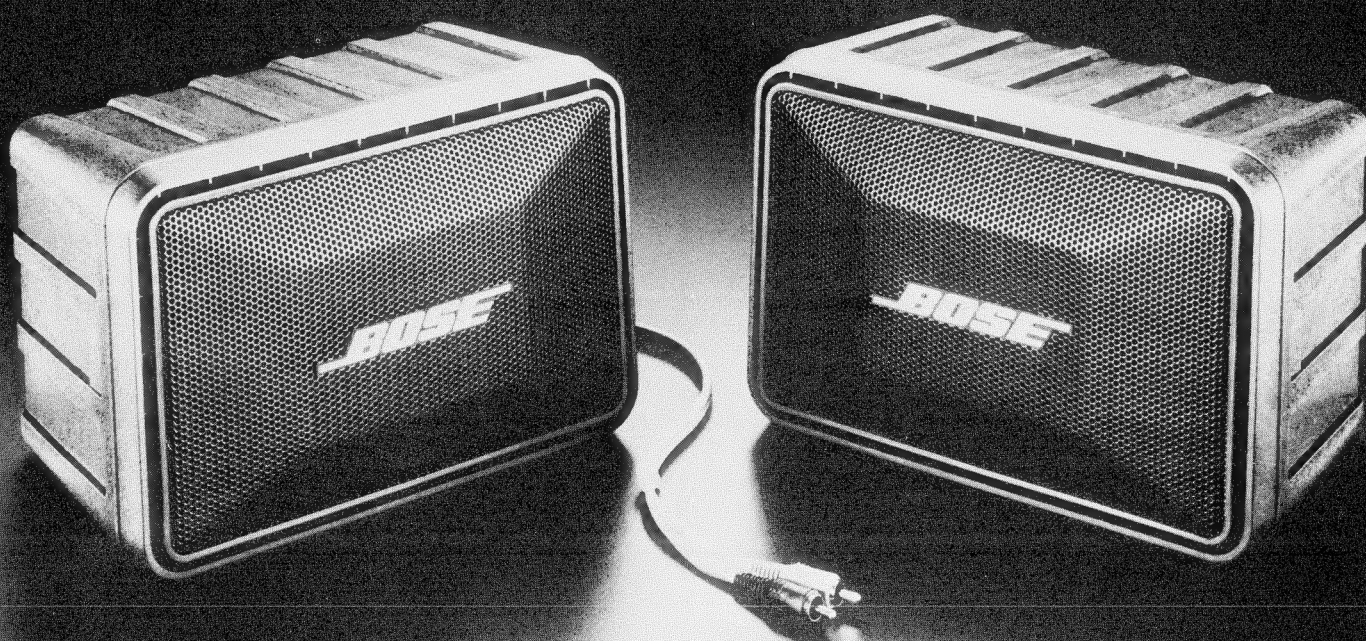


## Pro RoomMate® POWERED SPEAKER SYSTEM

# PRELIMINARY



### SPECIFICATIONS

**Transducer:**

1, 4½-inch full-range HVC driver  
per enclosure.

**Enclosure:**

Molded high-impact polystyrene  
copolymer

**Dimensions:**

9" W x 6" D x 6" H  
(22.9 W x 15.2 D x 15.2 H cm)

**Shipping Weight:**

12 pounds per system  
(5.44 kg)

**Power Requirements:**

120 volts, 30 watts

**Frequency Response:**

80 - 13 kHz

**Maximum SPL:**

(1 meter on axis pink noise)  
100 dB

**Input Impedances:**

Two sets of line level RCA inputs:  
1 k ohm  
10 k ohm (20 k dc resistance)

**Volume Control:**

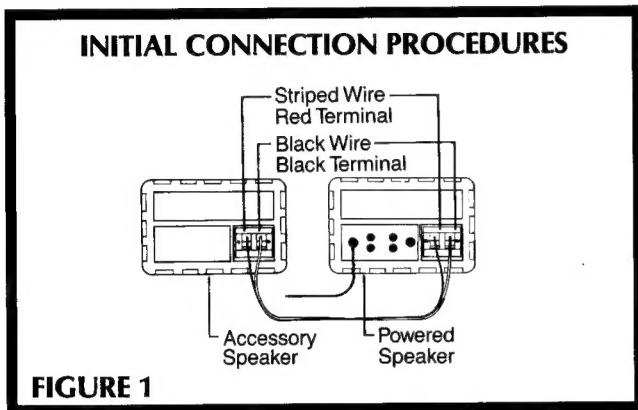
Rear mounted

## Pro RoomMate® INITIAL TEST PROCEDURES

**NOTE:** Since the Pro RoomMate is a self-amplified loudspeaker system, it is best to begin initial testing as per the normal operating instructions. In this manner you will be able to verify that all connections are correct and if the original complaint can be duplicated.

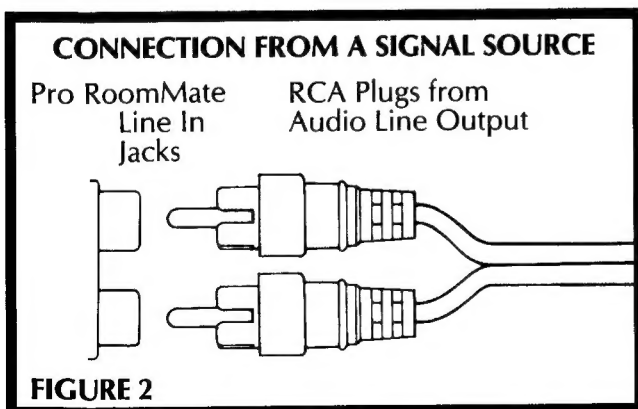
### CONNECTION INSTRUCTIONS:

1. Connect the Pro RoomMate's **POWERED** enclosure's output terminals to the **ACCESSORY** enclosure's input terminals. Make certain that polarity is observed. (See Figure 1.)



2. Connect a pair of RCA cables between the **stereo Line In** jacks of the **Powered** enclosure and the **Audio Line Output** jacks of any receiver, keyboard, or other component with **Audio Line** output capability. (See Figure 2.)

**NOTE:** The Pro RoomMate is a **2-channel unit** and only **one** speaker will function if only one input is utilized. To have **both** speakers function with a mono source, **use** a mono-to-stereo "Y" adaptor plug on the **input**.



3. Connect the **POWERED** enclosure's power cord into a variac or wall outlet.

4. Adjust the volume control of the Pro RoomMate to the desired operating level.

### 5. If the Pro RoomMate system

#### A. Functions normally:

1. Check all input jacks for intermittent operation.
2. Check the power cord for intermittent operation.
3. Check volume control for intermittent operation.
4. Make sure the customer is using a stereo source, two input cables, **or** a mono-to-stereo "Y" adaptor plug.

#### B. Has no output from either enclosure:

1. Check resistance of the power cord (30 to 100 ohms, depending on operating voltage) for open line cord or power transformer primary.
2. Check all input jacks (plug to ground) for an open condition (normally 18 k ohms aux input, 28 k ohms line input).
3. Check volume control for proper operation.
4. Check the PCB for failure.

**NOTE:** The amplifier PCB for **both channels** is located in the **POWERED** enclosure.

5. Measure the impedance of each transducer (approximately 1.5 ohms).

#### C. Output from **POWERED** enclosure only:

1. Check the right input jacks (plug to ground) for open condition (normally 18 k ohms aux input, 28 k ohms line input).
2. Check continuity of speaker wire connecting the two enclosures together.
3. Check impedance of **ACCESSORY** enclosure's transducer by measuring at the input terminals (normally 1.5 ohms).
4. Check volume control for proper operation.
5. Check the PCB for failure.

**NOTE:** The amplifier PCB for **both channels** is located in the **POWERED** enclosure.

#### D. Output from **ACCESSORY** enclosure only:

1. Check the left input jacks (plug to ground) for open condition (normally 18 k ohms aux input, 28 k ohms line input).
2. Check the PCB for failure.
3. Check impedance on **POWERED** enclosure's transducer (normally 1.5 ohms).

**NOTE:** If lack of bass response is noted, check wiring with schematic diagram on page 7 to assure that the speakers are wired in phase.

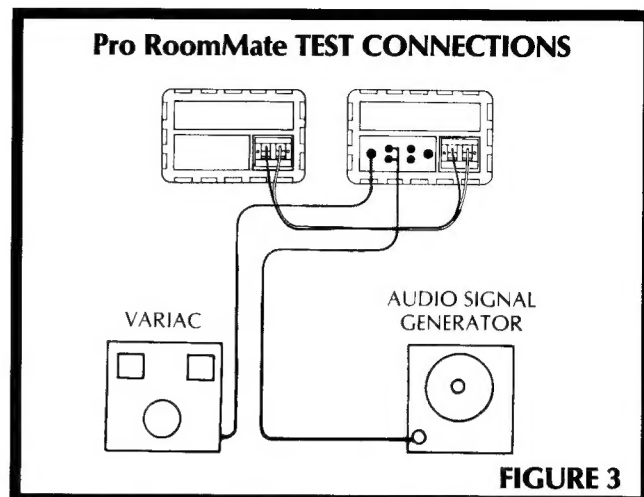
## Pro RoomMate® IN-DEPTH TEST PROCEDURE

### TRANSDUCER TESTING

**1. RUB AND TICK TEST:** Connect a sine wave oscillator to the input jacks of the Pro Room-Mate. Connect the power cord to a variac and set to the appropriate voltage. (See Figure 3.) Adjust the frequency of the oscillator to 10 Hz and the output to 100 mV. With the Pro Room-Mate's volume control set to maximum, no extraneous noises such as rubbing, scraping, or ticking should be heard.

**NOTE:** To distinguish between normal suspension noise and rubs or ticks, remove the grille (see Grille Removal Procedure), and displace the surround of the driver slightly with your fingers. If the noise can be made to go away or get worse, it is a rub or tick, and the driver should be replaced. If the noise stays the same, it is suspension noise and the driver is fine. Suspension noises will not be heard with program material.

**2. SWEEP TEST:** Sweep the oscillator from 10 Hz to 15 kHz. There should be no loud extraneous sounds. If there are loud buzzes or distortion,



replace the driver. The whooshing noise from the port at 80 Hz is normal.

**NOTE:** There should be no buzzes or rattles from within the Pro RoomMate cabinet. Redress any wire that buzzes.

**NOTE:** If lack of bass response is noted, check wiring with schematic diagram on page 7 to assure that the speakers are wired in phase.

### TRANSDUCER REPLACEMENT PROCEDURES

#### 1. GRILLE REMOVAL:

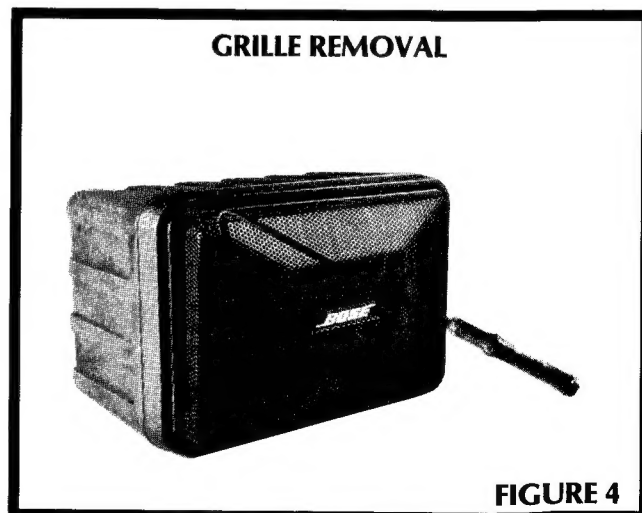
To remove the grille, take a flat-blade screwdriver or scribe, and grasp the **EDGE** of the grille at one of the corners. **GENTLY** work the grille out of the retaining slot.

**NOTE:** There is no grille frame exposed. You **MUST** grasp the grille on the metal portion of the grille and **NOT** the polystyrene, which is part of the speaker enclosure. (See Figure 4.)

#### 2. DRIVER REPLACEMENT:

Using a 1/4" socket, remove the three (3) screws holding the driver in place. Carefully lift the driver out of the enclosure and cut the wires as close to the driver terminals as possible. Strip the wires and reconnect to the replacement driver. Make certain that the red wire is connected to the positive (+) terminal and the black wire is connected to the negative (-) terminal of the driver.

Align the driver and gasket to the J-clips. Make certain the gasket is correctly positioned behind the driver to provide an airtight seal. Secure the driver to the J-clips with the three (3) screws. **DO NOT** overtighten.





## Pro RoomMate® PRINTED CIRCUIT BOARD TEST PROCEDURE

### SCOPE:

The Pro RoomMate powered speaker system has its built-in amplifier **located** in the **POWERED** enclosure. This test procedure covers the following areas:

1. Idle current
2. Input reference (Line In, Aux In)
3. Frequency response
4. Distortion
5. Compressor
6. Separation
7. Noise ratio
8. Volume control
9. Output offset

### TEST EQUIPMENT REQUIRED:

1. Dual trace oscilloscope
2. Audio signal generator
3. Distortion analyzer
4. dB meter
5. Digital voltmeter
6. Two 2-ohm, 5-watt load resistors

### TEST PREPARATION:

#### 1. BAFFLE REMOVAL (Powered Enclosure):

To properly test the Pro RoomMate PCB, you **must** use two 2-ohm load resistors on the amplifier outputs. To gain access to the amplifier PCB and the **POWERED** enclosure's output, you must remove the baffle. To remove the baffle, remove the six (6) cross-recess drive screws that hold the baffle in place. Do **NOT** remove the three (3) screws holding the driver in place.

Once the screws are removed, pry the baffle away from the enclosure body. This can be easily accomplished by inserting the hook portion of a scribe or your fingers into the ports. Use this as a grasping area to pry the two sections apart. This will expose the transformer and PCB. Untwist the various service loops for convenience.

#### 2. PRINTED CIRCUIT BOARD REMOVAL:

Using a 1/4" socket or angled flat-blade screwdriver, remove the two (2) screws holding the PCB in place. Once the screws have been removed, pull the PCB **straight out**, releasing the PCB from the retaining slots in the back of the enclosure.

### 3. ADDING LOAD RESISTORS:

Connect the first 2-ohm, 5-watt resistor to the red and black terminals on the back of the **POWERED** enclosure. This is the load for the **ACCESSORY** channel.

**NOTE:** The amplifier outputs are 180° **out of phase** with each other. This is corrected in the wiring **from** the PCB **to** the output for the **ACCESSORY** speaker **in** the **POWERED** enclosure.

**NOTE:** The **ACCESSORY** amplifier's signal return is **NOT** the black terminal. For test purposes, you **must** use the **red** terminal as the signal return line to prevent damaging the amplifier.

Next, remove the **black** wire from the **POWERED** enclosure's driver. Connect the second 2-ohm resistor between the black wire and the red wire (still connected to the driver). **NORMAL** polarity rules apply.

### TESTING:

#### 1. IDLE CURRENT:

Remove **either** of the red transformer secondary wires from the wire wrap terminal on the PCB. Insert an ammeter **between** the secondary and the wire wrap terminal.

**OUTPUT:** <310 mA

#### 2. INPUT REFERENCE (AUX IN & LINE INPUTS):

With the volume control on the **POWERED** enclosure set to the **maximum** position and the audio signal generator connected to **both AUX IN** jacks, adjust the input level to 50 mV at 1 kHz. Set the dB meter to **reference** at the **input** signal.

Move the dB meter to the **output**:

**OUTPUT:** 420 mV per channel.  
(+18.6 dB  $\pm$  1.8 dB from **input**)

Move audio signal generator to **both LINE IN** jacks and **insure** the **input signal** is 50 mV at 1 kHz. Set the dB meter to **reference** at the **input** signal.

Move the dB meter to the **output**;

**OUTPUT:** 225 mV per channel.  
(+13.6 dB  $\pm$  1.8 dB from **input**)

## Pro RoomMate® PRINTED CIRCUIT BOARD TEST PROCEDURES (Continued)

**THIS IS THE REFERENCE SIGNAL.** Set your dB meter to reference, and perform the following frequency response test:

### 3. FREQUENCY RESPONSE:

TABLE 1

FREQUENCY (Hz)	RESPONSE (dB)
1 kHz	0 - Reference
100 Hz	+15.7 ± 1.8 dB
10 kHz	+15.9 ± 1.8 dB

### 4. DISTORTION:

Keep the signal source to 50 mV at 10 kHz. Measure the distortion at the output load resistors of each channel.

**DISTORTION:** <.30% on both channels.

### 5. COMPRESSOR TEST:

Return signal source to 1 kHz and increase the **input** signal to 575 mV. Using the 575 mV **input** signal as reference, measure the **output** signal.

**OUTPUT:** 2.55 volts (+13.6 dB ± 1.8 dB)

Increase input signal 2 dB (730 mV)

**OUTPUT:** 2.55 volts (+13.6 dB ± 1.8 dB)

### 6. SEPARATION TEST:

Reduce the input signal to 440 mV at 1 kHz. **Eliminate** the signal from the **right** channel by disconnecting the **right** input from the signal generator.

**OUTPUT:** 2.05 volts (+13.6 dB ± 1.8 dB), **left** channel

**OUTPUT:** <200 mV on the **right** channel

Repeat the same procedure for the **left** channel.

### 7. NOISE RATIO:

Remove signal generator from both inputs.

**OUTPUT:** <250 uV, both channels. A weighted.

### 8. VOLUME CONTROL:

Reconnect signal generator to both line inputs. Assure that the input signal is 50 mV. Measure the output.

**OUTPUT:** 225 mV per channel  
(+13.6 dB ± 1.8 dB from **input**)

Move the volume control on the **POWERED** enclosure **gradually** to the minimum position.

**OUTPUT:** Will gradually reduce to 0 volts.

**BALANCE:** ± 4 dB along complete range.

### 9. OUTPUT OFFSET:

Set signal source to 0 volts. Using a digital volt-meter, measure the dc voltage across the load resistors.

**OUTPUT:** <50 mV per channel.

## NORMALIZING THE SYSTEM

### 1. REMOVING LOAD RESISTORS:

Disconnect the resistor from the back of the **POWERED** enclosure. Also, remove the resistor from the black and red wires of the **POWERED** enclosure's driver. Reconnect the black wire to the driver.

### 2. PRINTED CIRCUIT BOARD INSTALLATION:

Place the PCB onto the guide rails between the two baffle mounting posts. Push the board back into the enclosure until the clips lock into place. Do **NOT** pinch any wires.

Secure the front of the PCB with the two screws, using a ¼" socket or an angled flat-blade screwdriver. Do **not** overtighten.

Twist excess wire into service loops.

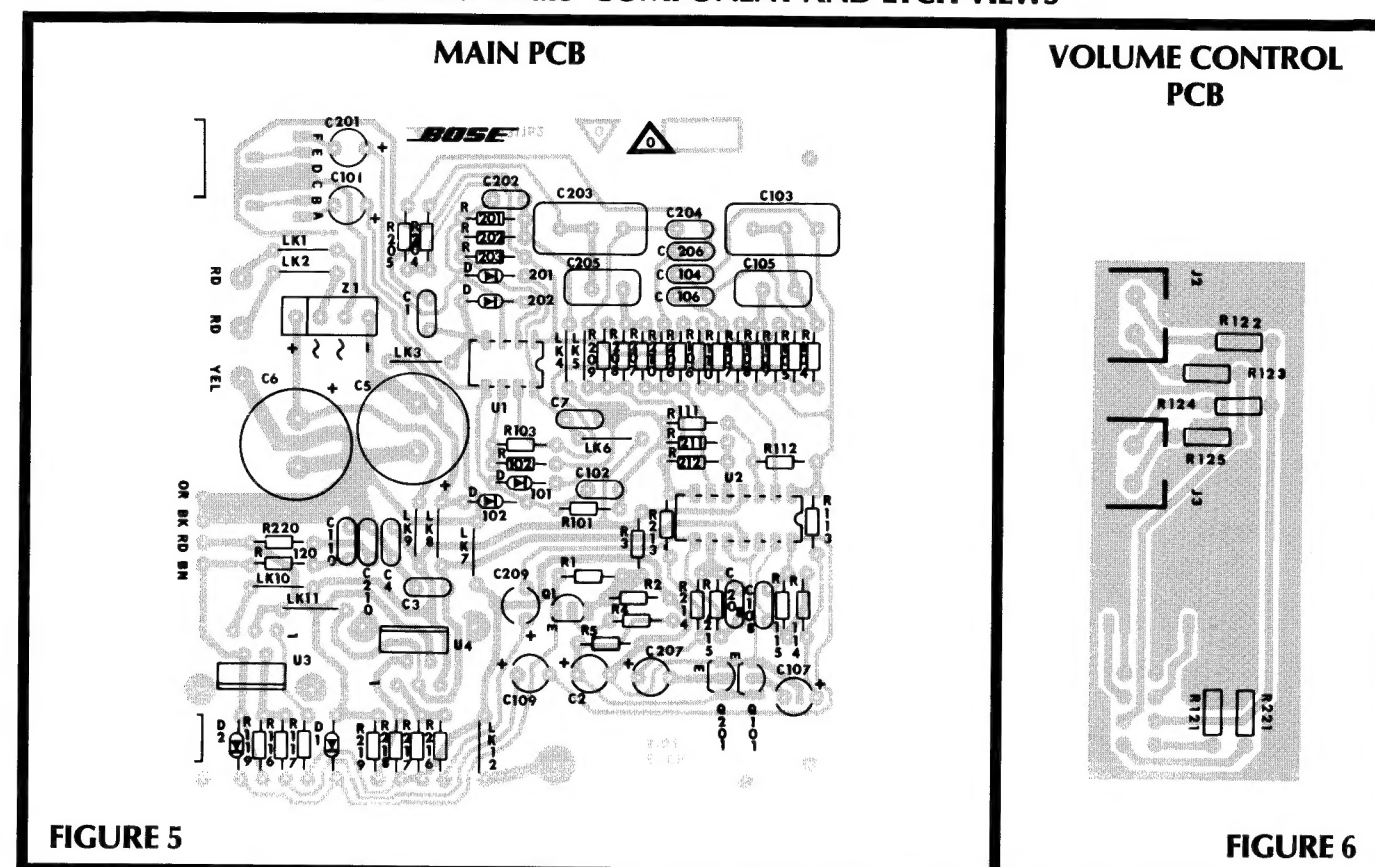
### 3. BAFFLE AND ENCLOSURE ASSEMBLY:

To reassemble the enclosure and baffle, align the port side of the baffle to the side of the enclosure that has the input terminals. (The baffle will fit correctly only one way.) Secure the baffle with the six (6) screws. Do **NOT** overtighten the screws.

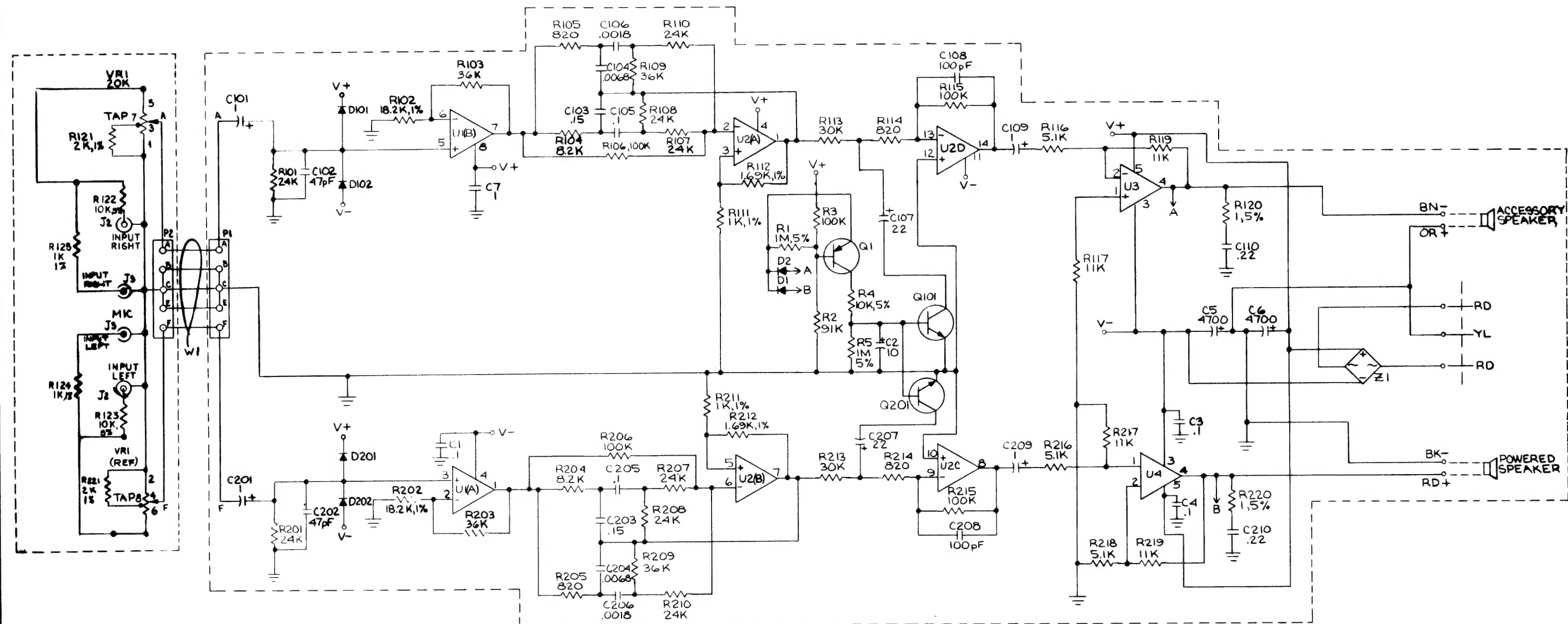
### 4. GRILLE INSTALLATION:

To install the grille, first make certain that the logo position is correct (not upside down) with the print on the back of the speaker enclosure. Fit the grille to two adjacent corners of the enclosure. Gently apply pressure to the two remaining corners to fit the grille into the enclosure.

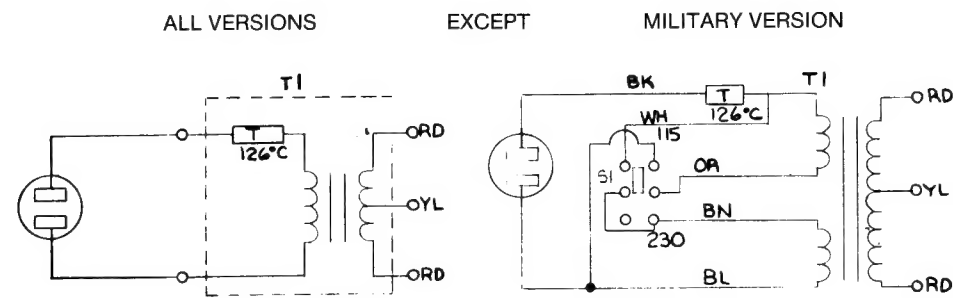
## Pro RoomMate® COMPONENT AND ETCH VIEWS



# Pro RoomMate® SCHEMATIC DIAGRAM



- NOTES:
- UNLESS OTHERWISE SPECIFIED:
    - ALL RESISTORS ARE 1/4W, 2%, AND EXPRESSED IN OHMS.
    - ALL CAPACITORS ARE EXPRESSED IN MICRO FARADS.
    - ONLY REPLACE: T1 WITH EXACT TYPE: (Bose P/N 100 VAC), P/N 128056 (120 VRMS), P/N 128057 (220/240 VAC), P/N 128058 (115/230 VAC); AND LINE CORD WITH P/N 125710 (120 VAC), OR P/N 125711 (220 VAC) AVAILABLE FROM:  
BOSE CUSTOMER SERVICE  
78 TURNPIKE RD.  
WESTBORO, MA 01581
  - TO COMPLY WITH SAFETY STANDARDS, ALL ELECTRONIC PRODUCTS RETURNED FOR SERVICE MUST HAVE A RESISTANCE MEASUREMENT TEST MADE BETWEEN THE LINE CORD (MAINS SUPPLY) CONTACTS AND THE CHASSIS GROUND BEFORE RETURNING IT TO THE CUSTOMER. THE RESISTANCE MEASUREMENT IS TO MAKE SURE A POSSIBLE SHOCK HAZARD DOES NOT EXIST. THE ENCLOSURE MUST BE FULLY ASSEMBLED FOR TESTING. UNPLUG THE PRODUCT FROM THE WALL RECEPTACLE (MAINS) AND MEASURE THE RESISTANCE BETWEEN ONE OR BOTH OF THE TWO LINE CORD PLUG CONTACTS AND CHASSIS (GROUND), WHICH SHOULD BE TEN MEGOHMS D.C. MINIMUM. IF NOT, CHECK FOR POSSIBLE SHORTS IN THE PRIMARY (MAINS) CIRCUITRY AREA OF A FAULTY POWER TRANSFORMER.



COMPONENT	HIGHEST REF. DES.			
	COMMON	ACCESSORY	POWERED	NOT USED
RESISTORS	R5	R125	R221	R118
CAPACITORS	C7	C110	C210	
TRANSISTORS	Q1	Q101	Q201	
DIODES	D2	D102	D202	
IC'S, OP AMPS	U4			
RECTIFIER	Z1			
POTENTIOMETER	VR1			
CONNECTOR	P2		J3	J1

## Pro RoomMate® AMPLIFIER/EQUALIZER PARTS LIST

### SEMICONDUCTORS

Location	Description	Part No.
U1	IC (RC 4559)	108568
U2	IC (LS404)	120535
U3, 4	IC (ULN 3751)	127067
Q1	Transistor - PNP (A 608)	119168
Q101, 201	Transistor - NPN (C536)	117921
D1, 2, 101, 102, 201, 202	Diode (IN4148)	121501
Z1	Bridge Rectifier (KBP 005)	124785

### CAPACITORS

C1, 3, 4, 7	Capacitor, CER, .1 uF	117502
C2	Capacitor, Elect. 10 uF 35V	119944-100
C5, 6	Capacitor, Elect. 4700 uF 16V	124997
C101, 201, 109, 209	Capacitor, Elect., 1 uF 50V	119942-1R0
C102, 202	Capacitor, Ceramic 47 pF 5%	119617-470
C103, 203	Capacitor, Film .15 uF 5%	118091-154
C104, 204	Capacitor, Film .0068 uF 5%	118091-682
C105, 205	Capacitor, Film .1 uF 5%	118091-104
C106, 206	Capacitor, Film .0018 uF 5%	118091-182
C107, 207	Capacitor, Elect. 22 uF 35V	119944-220
C108, 208	Capacitor, Elect. 100 pF 5%	119617-101
C110, 210	Capacitor, Film, .22 uF	122026-224

### RESISTORS

Location	Description	Part No.
R1, 5	Resistor, CF, 1M 1/4W 5%	117704-1211055
R2	Resistor, CF, 91K 1/4W 2%	117704-1219132
R3, 106, 206, 115, 215	Resistor, CF, 100K 1/4W 2%	117704-1211042
R4, 122, 123	Resistor, CF, 10K 1/4W 5%	117704-1211035
R101, 201, 107, 207, 108, 208, 110, 210	Resistor, CF, 24K 1/4W 2%	117704-1212432
R102, 202	Resistor, CF, 18.2K 1/4W 1%	119976-1211822
R103, 203, 104, 204	Resistor, CF, 8.2K 1/4W 2%	117704-1218222
R105, 205, 114, 214	Resistor, CF, 820 1/4W 2%	117704-1218212
R109, 209	Resistor, CF, 36K 1/4W 2%	117704-1213632
R111, 211	Resistor, CF, 1.00K 1/4W 1%	119976-2211001
R112, 212	Resistor, CF, 1.69K 1/4W 1%	119976-2211691
R113, 213	Resistor, CF, 30K 1/4W 2%	117704-1213032
R116, 216, 218	Resistor, CF, 5.1K 1/4W 2%	117704-1215122
R117, 217, 119, 219	Resistor, CF, 11K 1/4W 2%	117704-1211132
R120, 220	Resistor, CF, 1 ohm 1/4 5%	117704-1211R05
R121, 221	Resistor, CF, 2.00K 1/4W 1%	119976-2212001
VR-1*	Potentiometer, 20K, 8-Pin	131181

### VOLTAGE VARIANCES

Location	Description	Part No.
	Strain Relief	124724
	Closed End Splice	125618
	Line Cord, 120V	125710
	Line Cord, 220V	125711
	Line Cord, 250V Aus	128932
Transformer Mount	Screw, Hex Wshr. Face, #8 x 3/4	125916-12
	Transformer, Power 120V	128056
	Transformer, Power 230V	128057
	Transformer, 115V/230V Military	128058
	Switch, Line Voltage Selector (Military)	124854
	Switch, Power (220, 240 Volt)	130265
	Gasket (220, 240, Military)	128409
	Terminal (220, 240 Volt)	130412
	Screw, Bk, Cr Rec #6 x 5/8 L (220, 240 Volt)	103122-10
	Speed Nut (220, 240 Volt Military)	125571

### MISCELLANEOUS

U3, 4	Heat Sink	129364
	Nut, Kep 4-40	100413-5
	Screw, 4-40 1/4" Fil Head	103140-04
	Bumper, PCB	103593
	Interconnect Cable	123576
Front PCB Mount	Screw, Hex Wshr. Face #6 x 3/8"	124721-06
Front PCB Mount	Tinnerman Nut	124617
Rear PCB Mount	Tinnerman U Clip	124722
	Shield, PCB	128552
	Cable, RCA to RCA	102876
	Adapter, Stereo, Mini to RCA	128404
	Shield, Metal RF	128740
	Nylon Spacer	128804
	Plastic Rivet	128805
	Wire Clamp	128818
	Owner's Manual	130908
	Carton	131125
	Foam Filler	124921
	Corrugated Divider	125604
	Accessory/Literature Kit	131054
	Solder Lug Assy.	128479

\*NOTE: If replacement of VR-1 is necessary, refer to steps 1&2 of TEST PREPARATION (Baffle and PCB Removal).